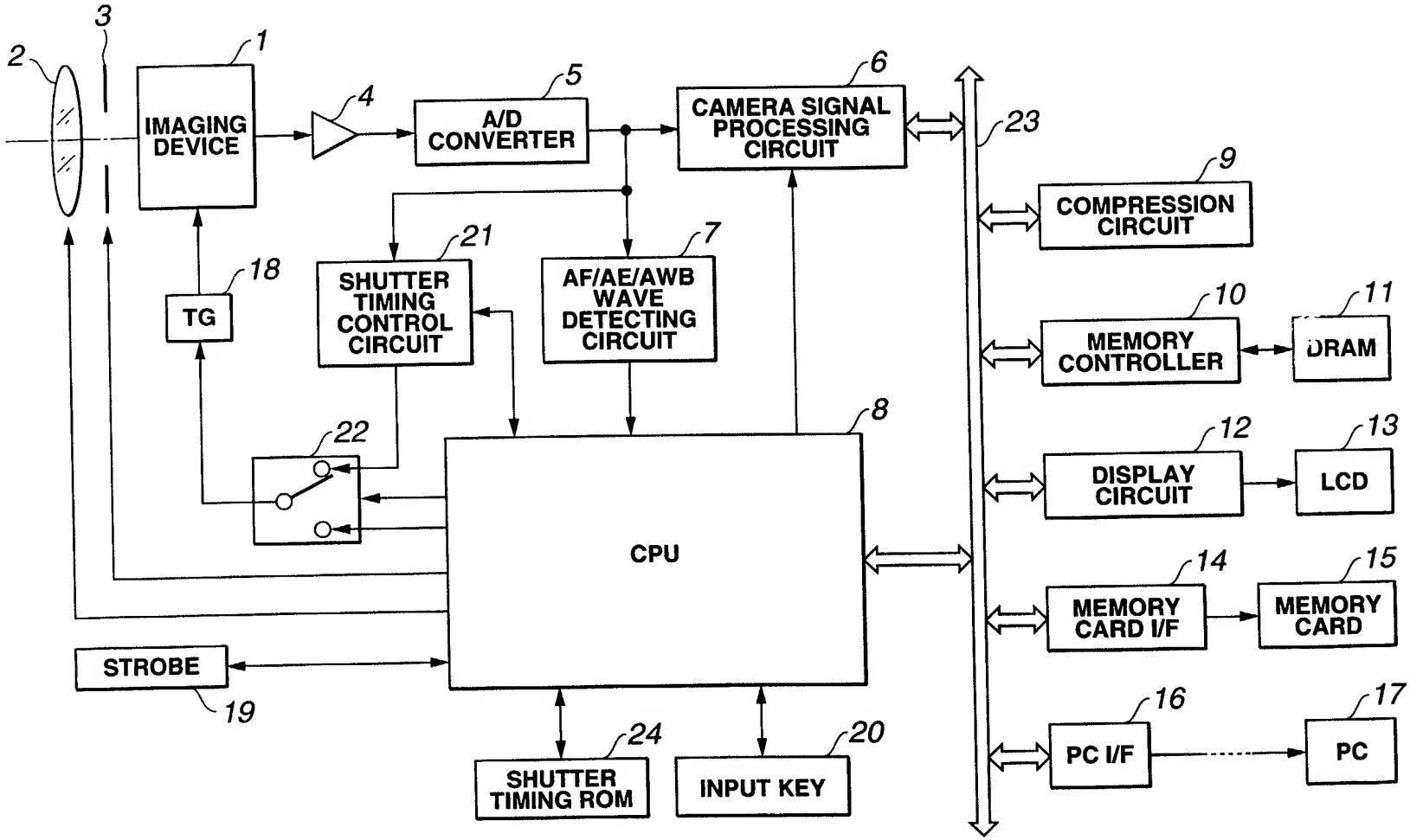
TOSHIBA DESKTOP

FIG.1



TOE30T "OESSHOT

FIG.2

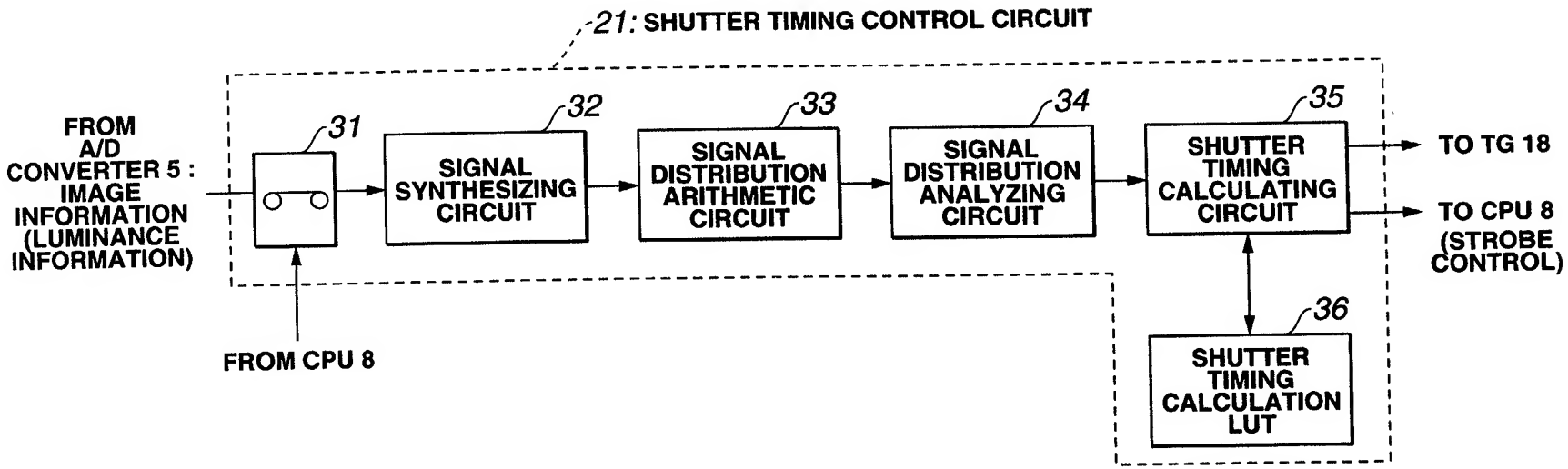


FIG.3

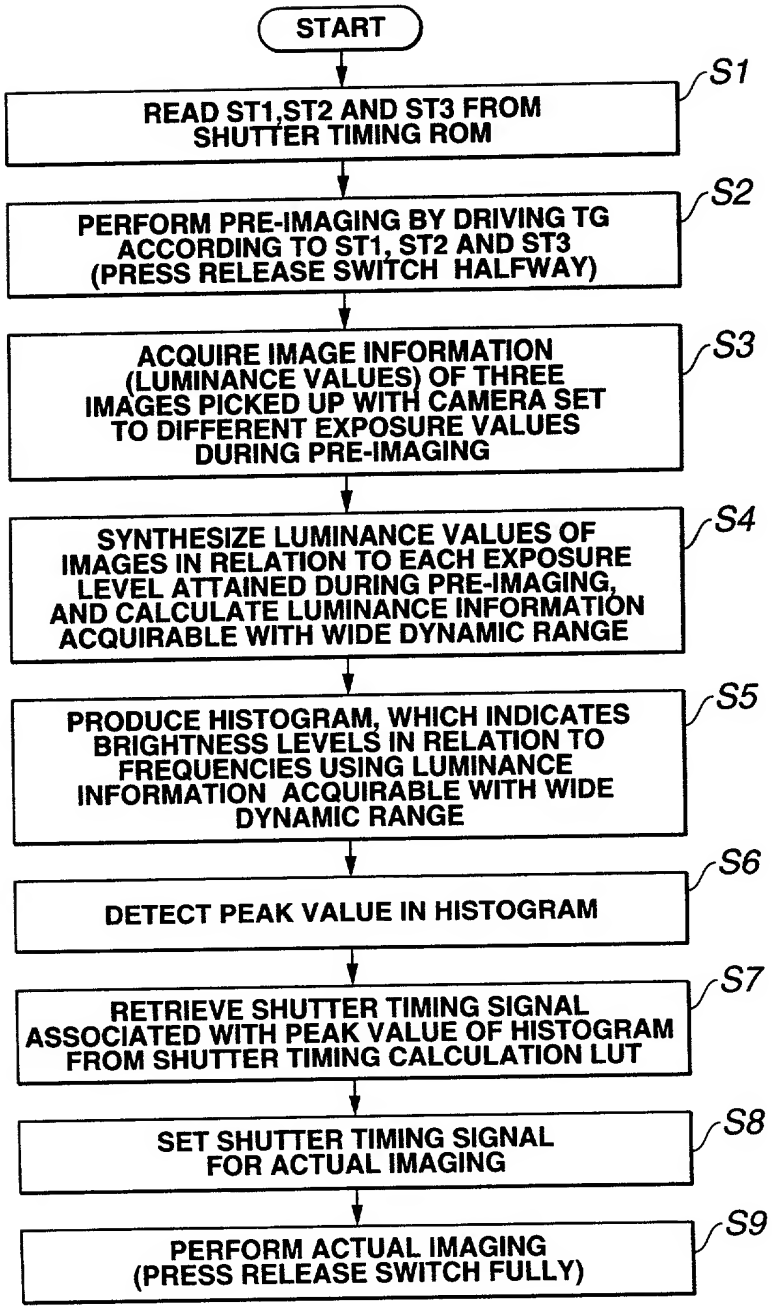

START
READ ST1,ST2 AND ST3 FROM SHUTTER TIMING ROM
S1
PERFORM PRE-IMAGING BY DRIVING TG ACCORDING TO ST1, ST2 AND ST3 (PRESS RELEASE SWITCH HALFWAY)
S2
ACQUIRE IMAGE INFORMATION (LUMINANCE VALUES) OF THREE IMAGES PICKED UP WITH CAMERA SET TO DIFFERENT EXPOSURE VALUES DURING PRE-IMAGING
S3
SYNTHESIZE LUMINANCE VALUES OF IMAGES IN RELATION TO EACH EXPOSURE LEVEL ATTAINED DURING PRE-IMAGING, AND CALCULATE LUMINANCE INFORMATION ACQUIRABLE WITH WIDE DYNAMIC RANGE
S4
PRODUCE HISTOGRAM, WHICH INDICATES BRIGHTNESS LEVELS IN RELATION TO FREQUENCIES USING LUMINANCE INFORMATION ACQUIRABLE WITH WIDE DYNAMIC RANGE
S5
DETECT PEAK VALUE IN HISTOGRAM
S6
RETRIEVE SHUTTER TIMING SIGNAL ASSOCIATED WITH PEAK VALUE OF HISTOGRAM FROM SHUTTER TIMING CALCULATION LUT
S7
SET SHUTTER TIMING SIGNAL FOR ACTUAL IMAGING
S8
PERFORM ACTUAL IMAGING (PRESS RELEASE SWITCH FULLY)
S9

FIG.4A

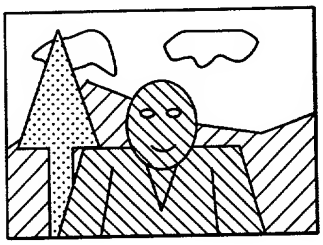
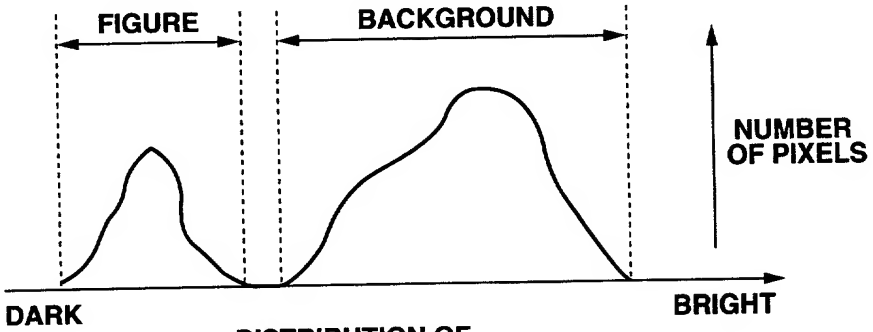


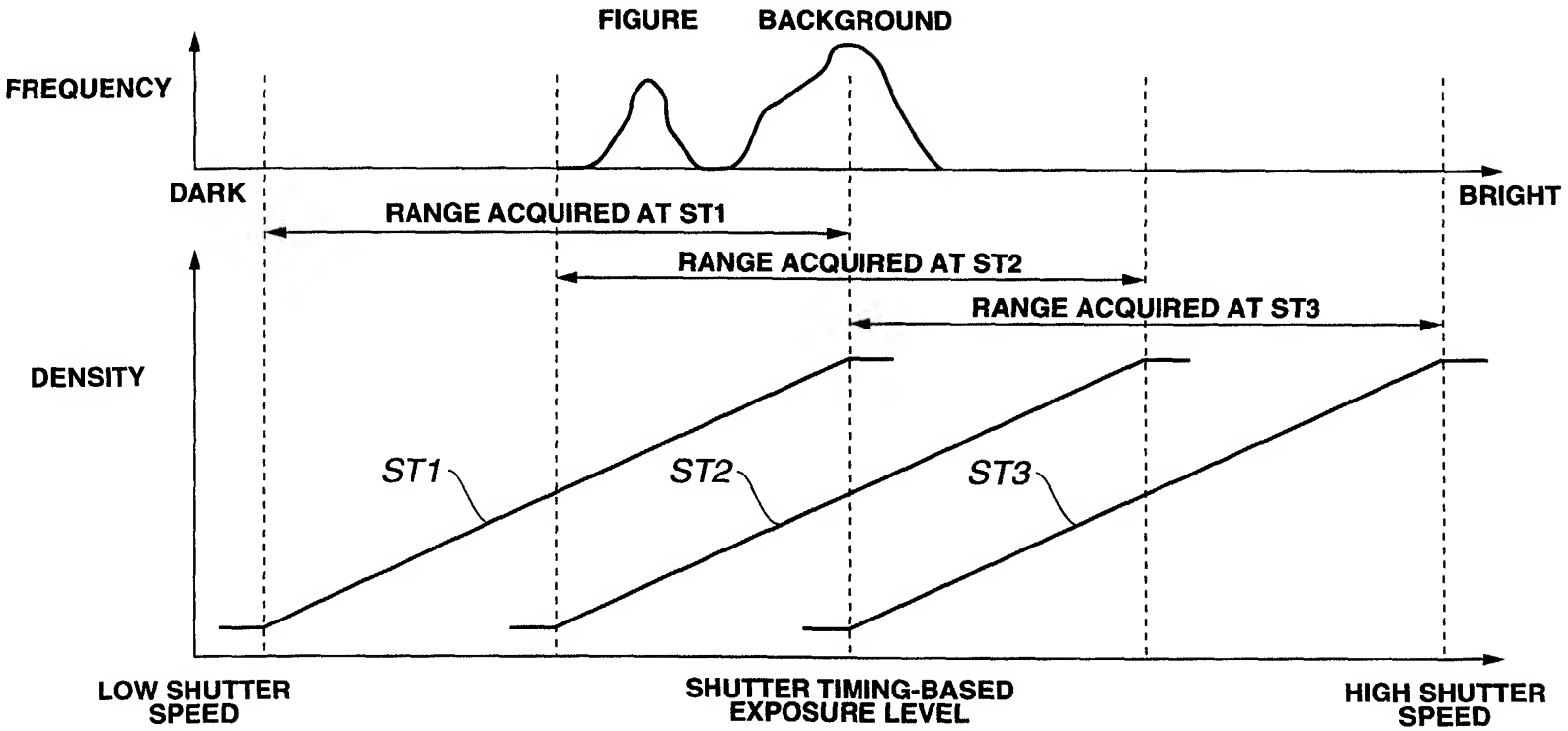
FIG.4B



DISTRIBUTION OF BRIGHTNESS LEVELS IN PHOTOGRAPHIC SCENE

Toezot "Desktop

FIG.5



TOSHIBA DESKTOP

FIG.6

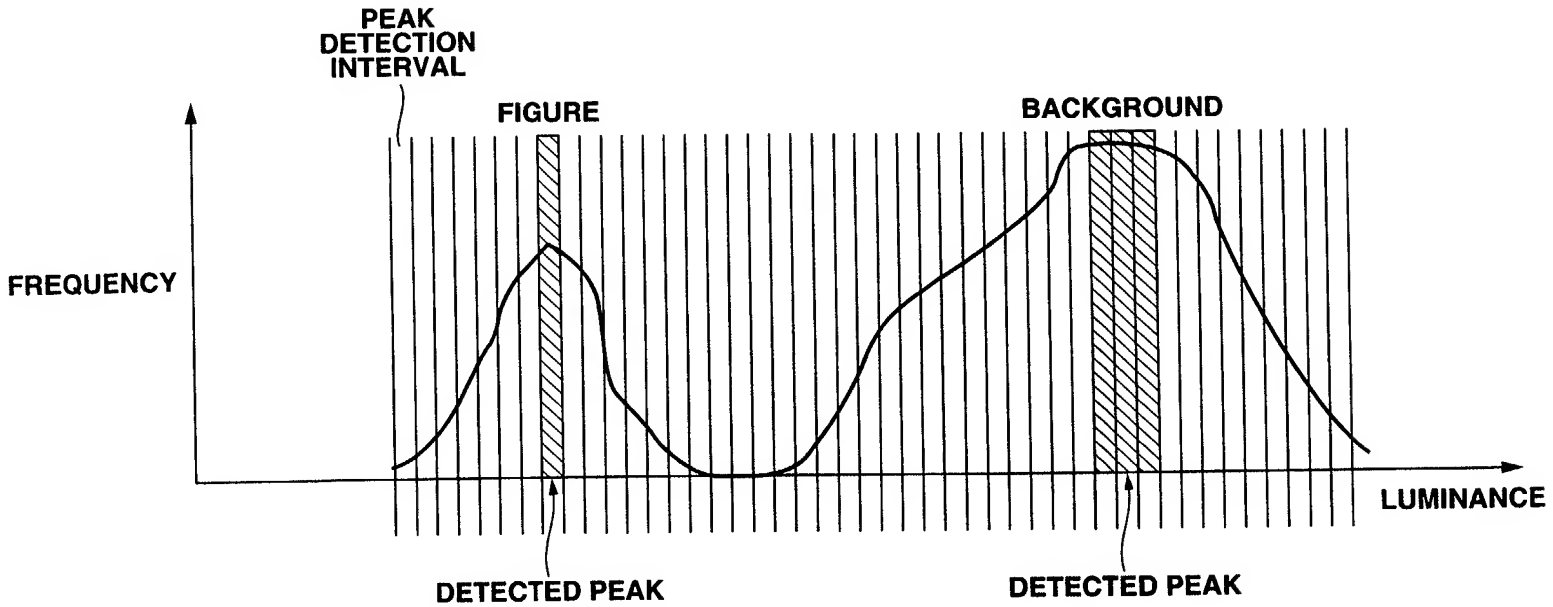


FIG.7

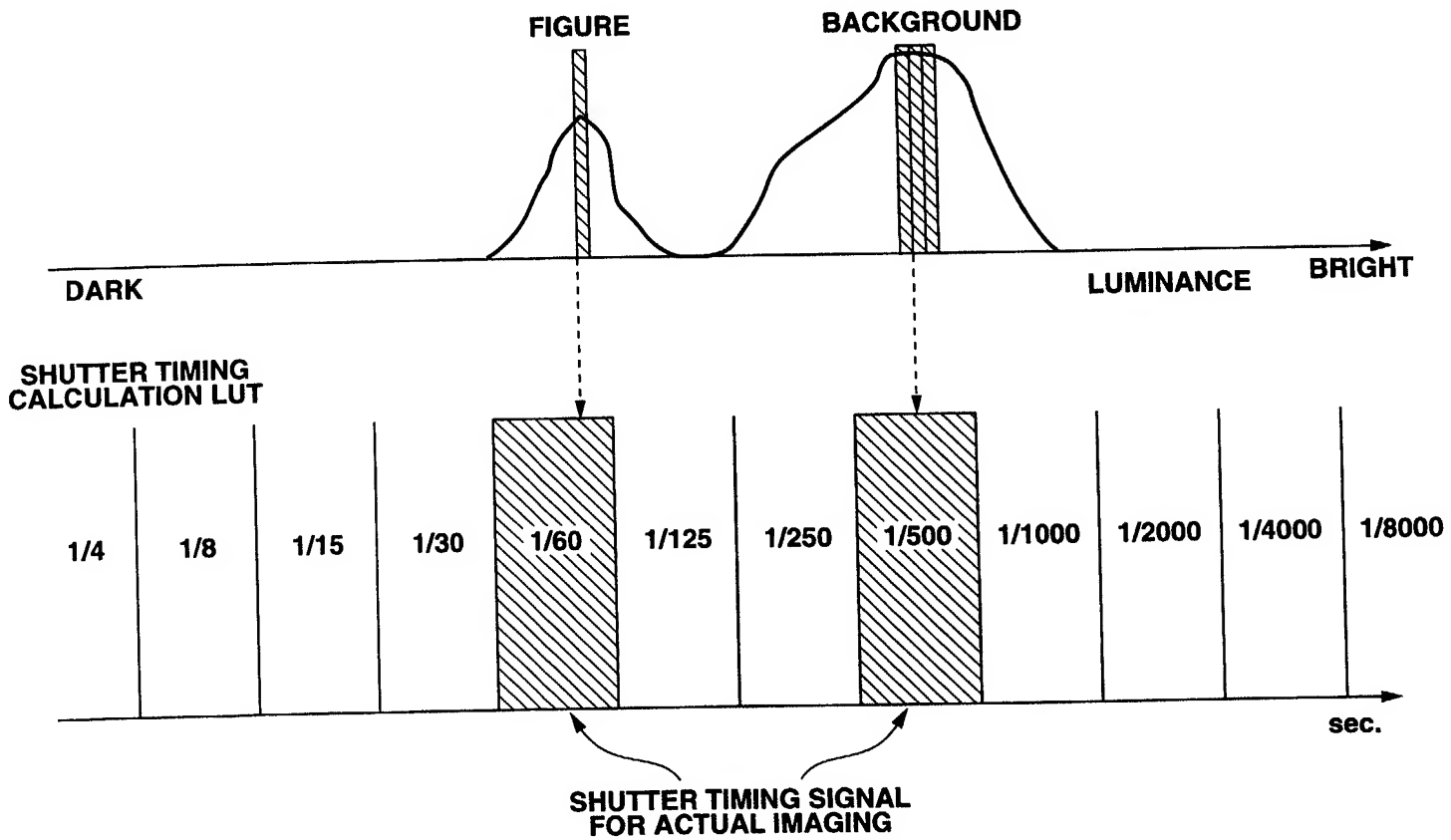
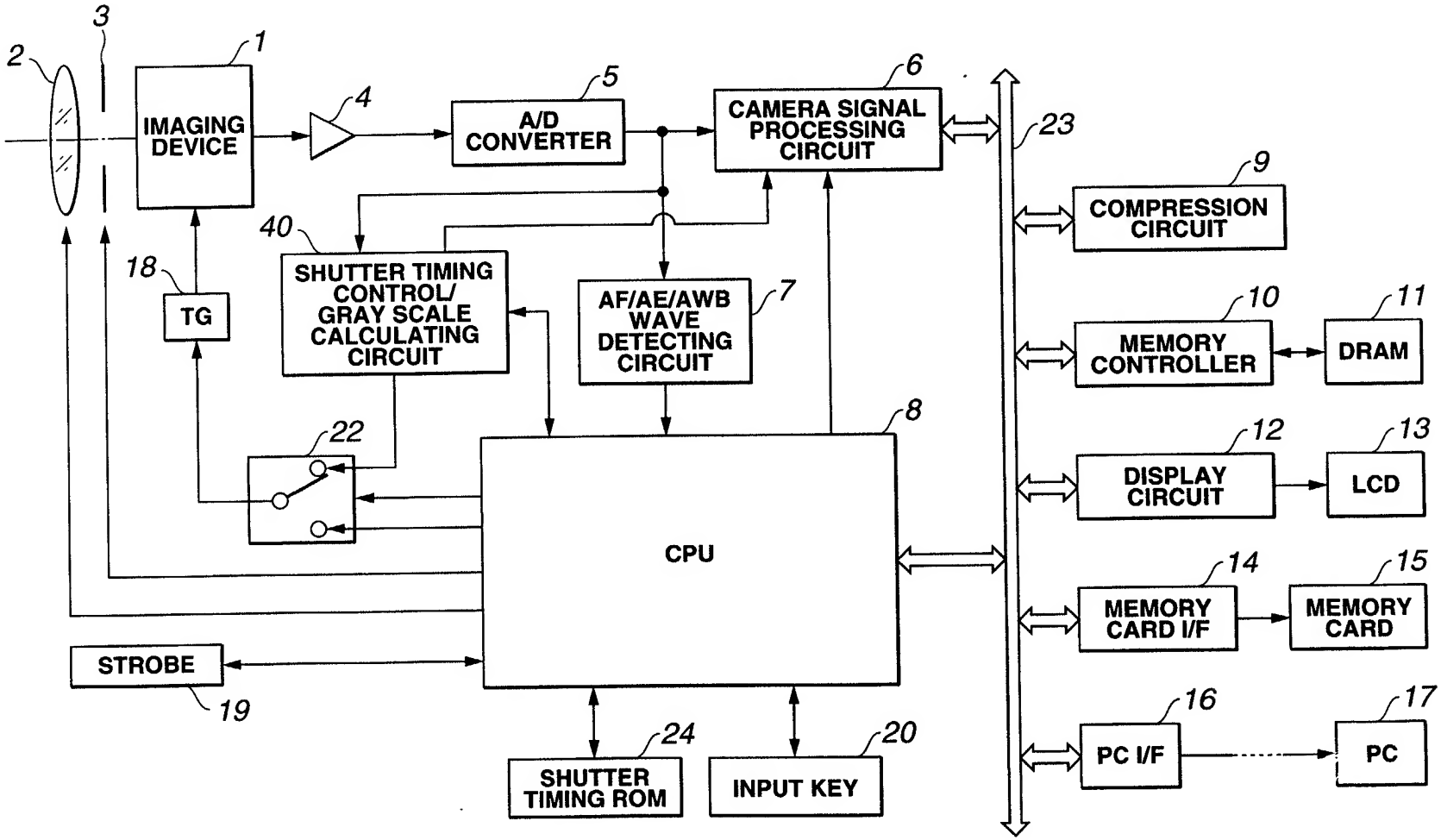


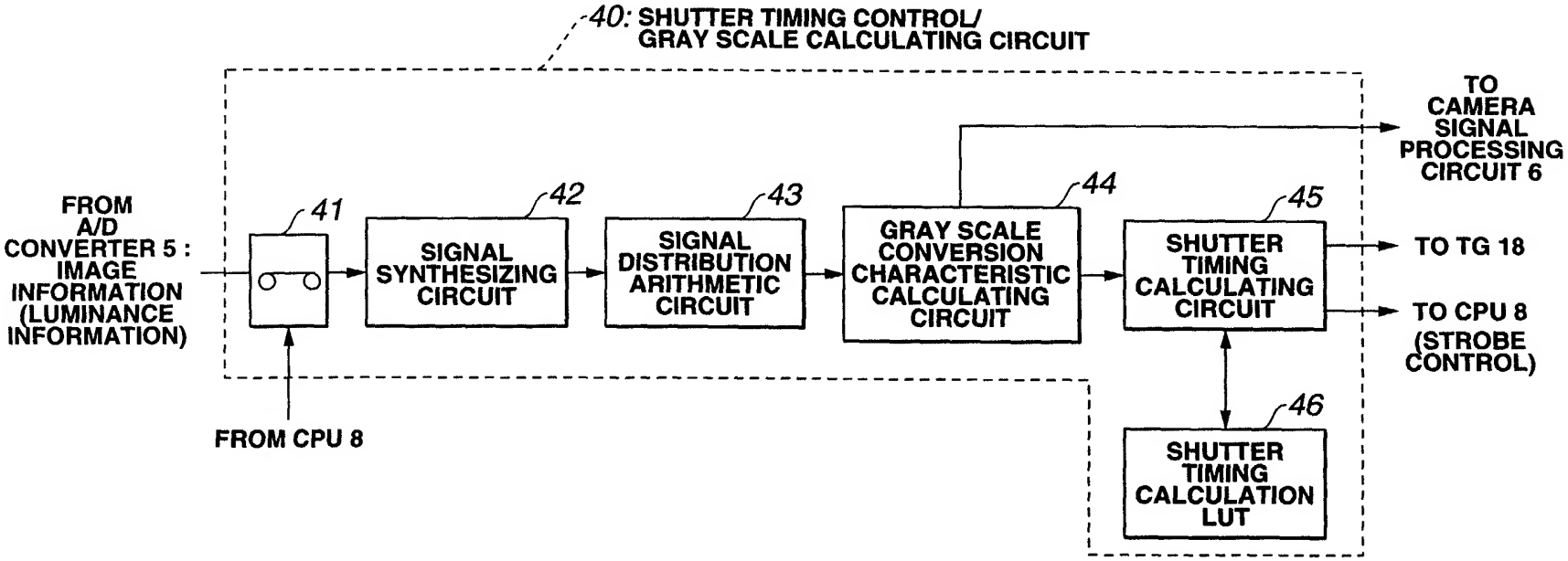
FIGURE
BACKGROUND
DARK
LUMINANCE
BRIGHT
SHUTTER TIMING CALCULATION LUT
1/4
1/8
1/15
1/30
1/60
1/125
1/250
1/500
1/1000
1/2000
1/4000
1/8000
sec.
SHUTTER TIMING SIGNAL FOR ACTUAL IMAGING

FIG.8


3
2
1
IMAGING DEVICE
4
5
A/D CONVERTER
6
CAMERA SIGNAL PROCESSING CIRCUIT
23
9
COMPRESSION CIRCUIT
40
18
TG
SHUTTER TIMING CONTROL/ GRAY SCALE CALCULATING CIRCUIT
AF/AE/AWB WAVE DETECTING CIRCUIT
7
10
MEMORY CONTROLLER
11
DRAM
22
8
12
DISPLAY CIRCUIT
13
LCD
CPU
14
MEMORY CARD I/F
15
MEMORY CARD
STROBE
19
16
PC I/F
17
PC
24
SHUTTER TIMING ROM
20
INPUT KEY

TOSHIBA DESKTOP

FIG.9



TOSHIBA DESKTOP

FIG.10A

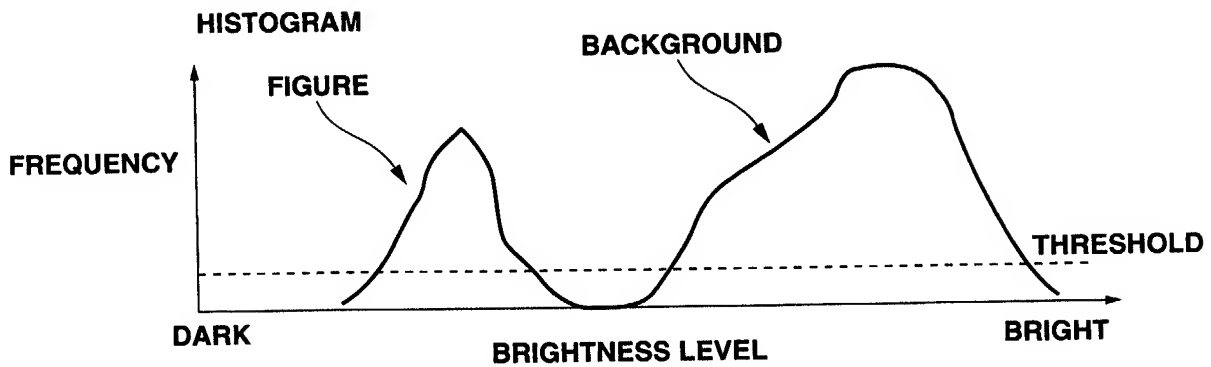


FIG.10B

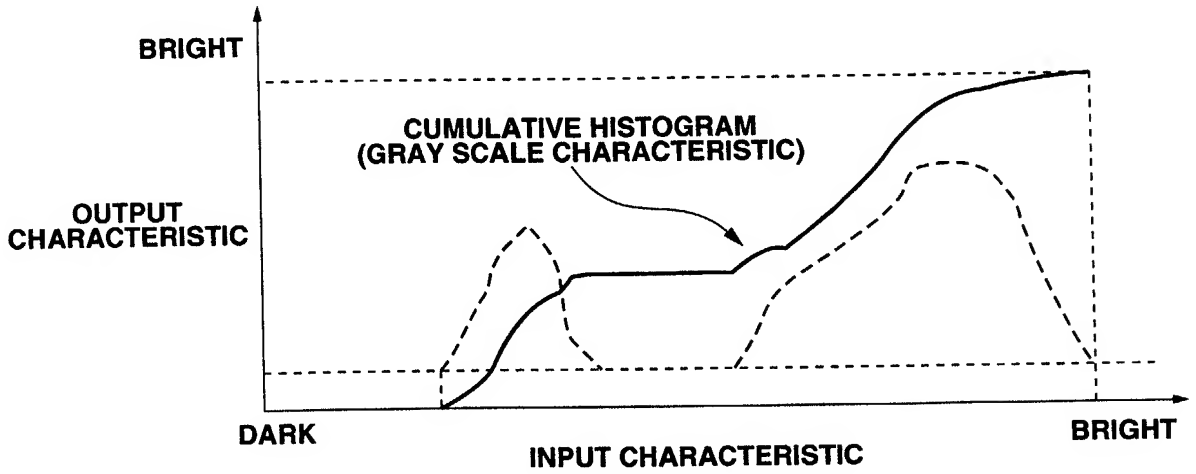
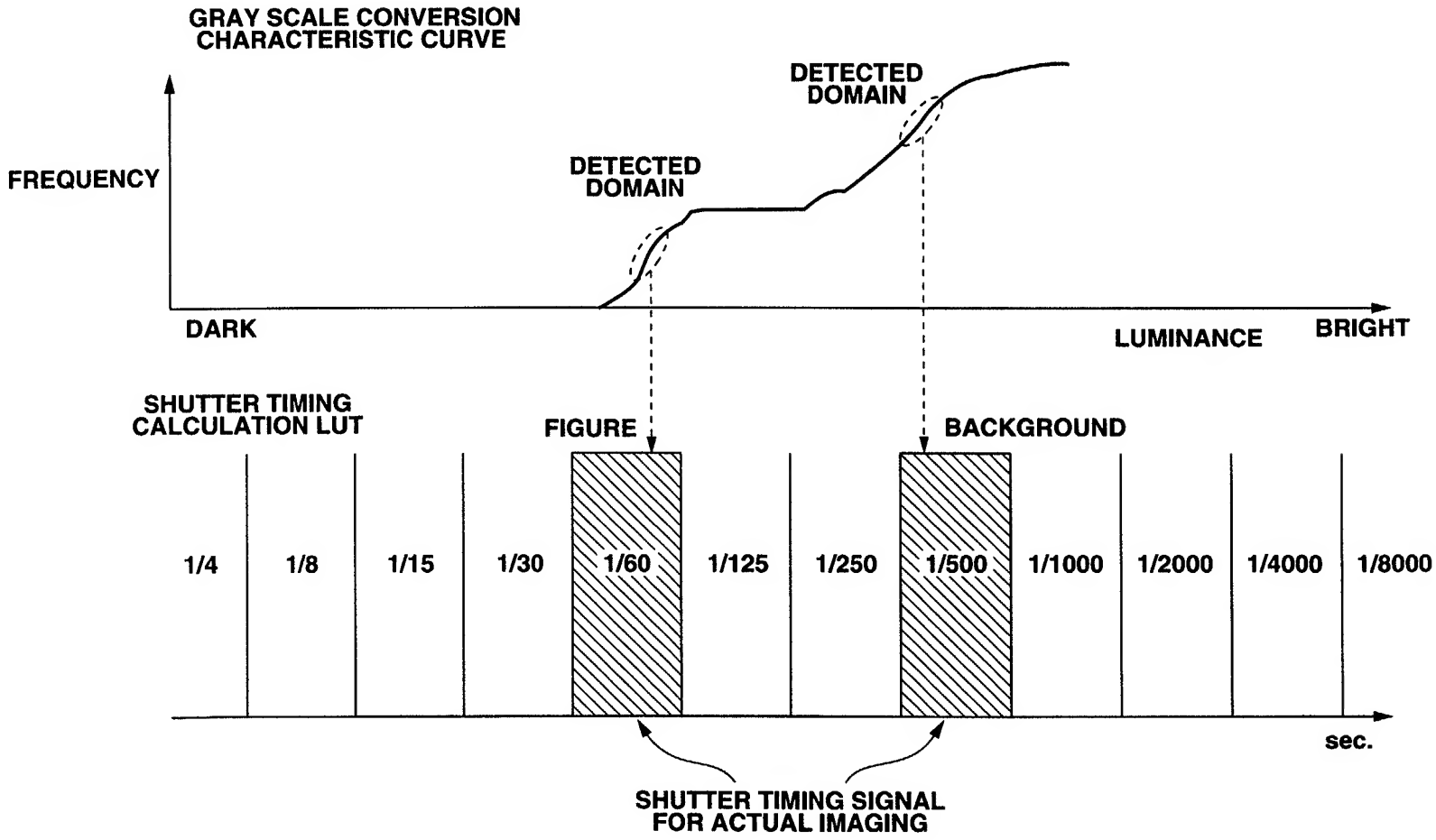
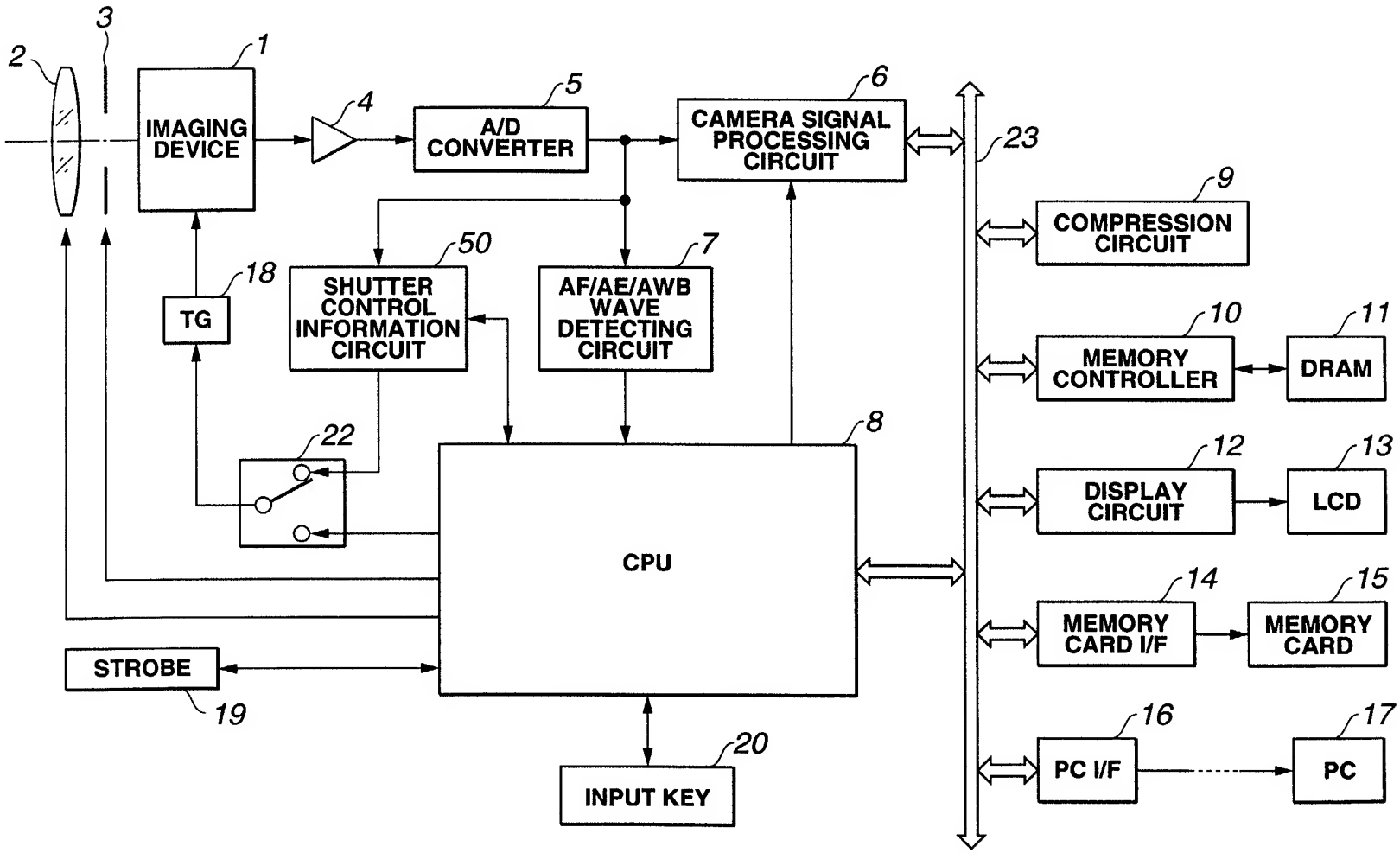


FIG.11


GRAY SCALE CONVERSION CHARACTERISTIC CURVE
FREQUENCY
DETECTED DOMAIN
DETECTED DOMAIN
DARK
LUMINANCE
BRIGHT
SHUTTER TIMING CALCULATION LUT
FIGURE
BACKGROUND
1/4
1/8
1/15
1/30
1/60
1/125
1/250
1/500
1/1000
1/2000
1/4000
1/8000
sec.
SHUTTER TIMING SIGNAL FOR ACTUAL IMAGING

TOSHIBA DESHOOT

FIG.12



TOE20T DESKDOT

FIG.13

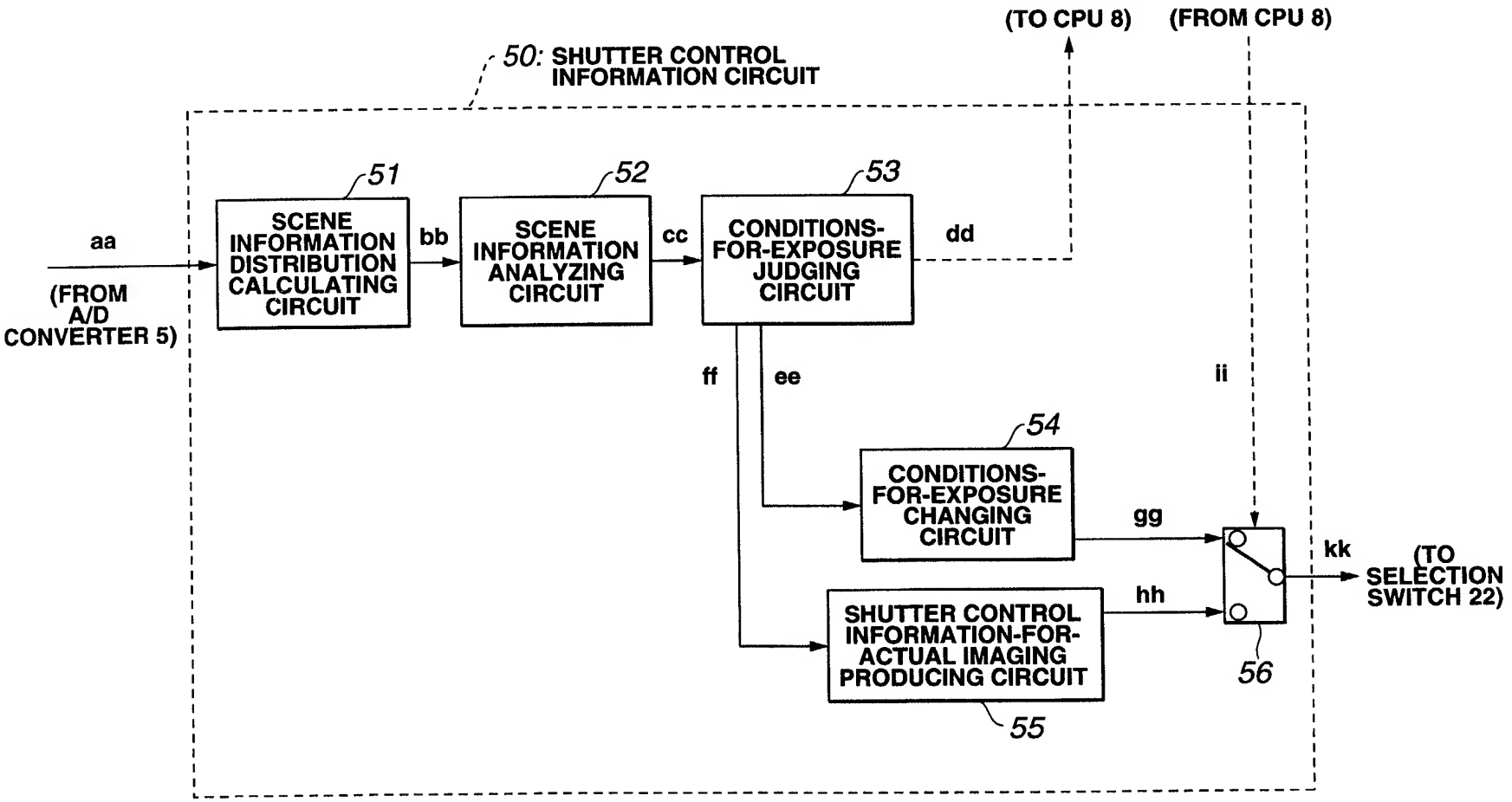


FIG.14

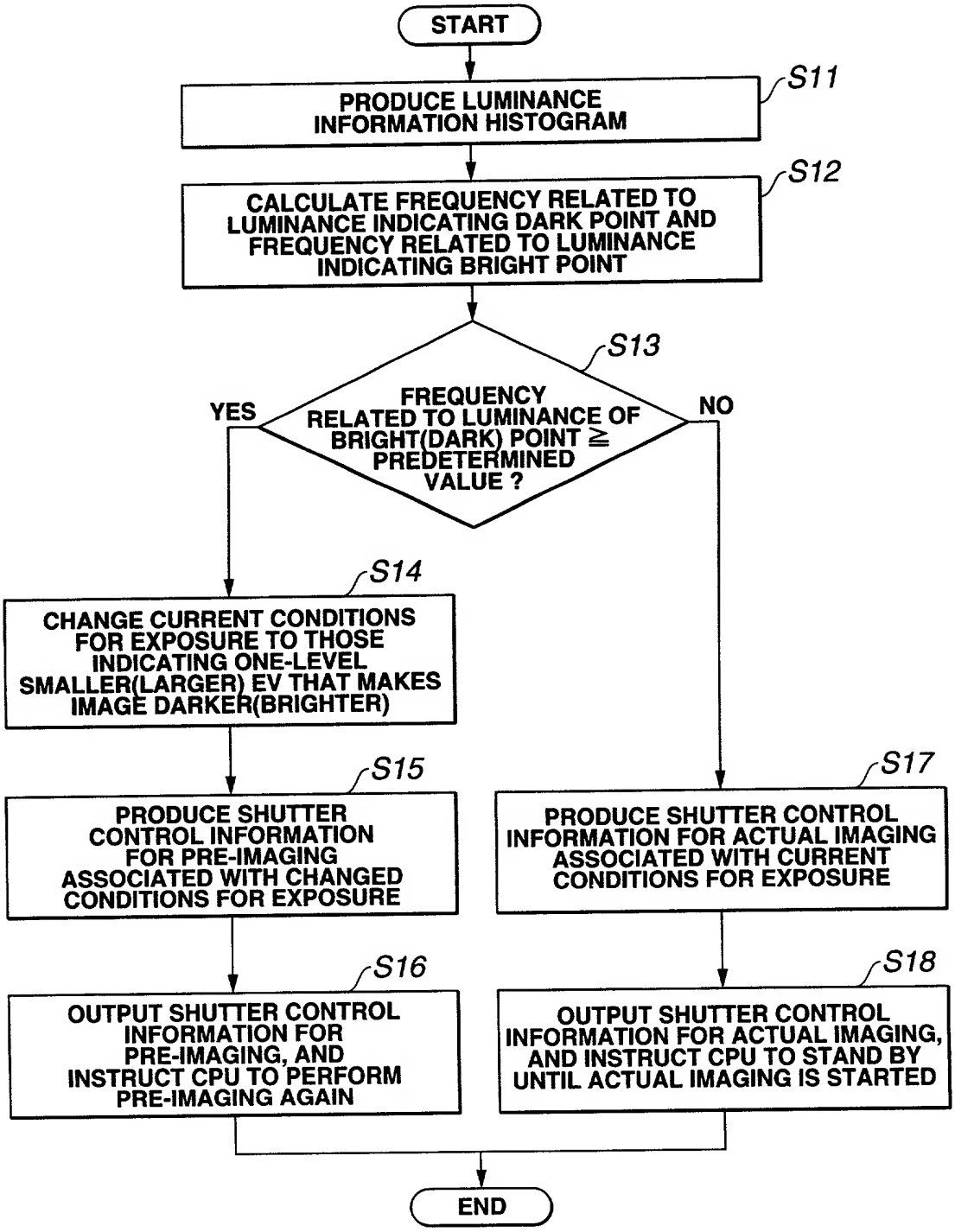

START
PRODUCE LUMINANCE INFORMATION HISTOGRAM
S11
CALCULATE FREQUENCY RELATED TO LUMINANCE INDICATING DARK POINT AND FREQUENCY RELATED TO LUMINANCE INDICATING BRIGHT POINT
S12
FREQUENCY RELATED TO LUMINANCE OF BRIGHT(DARK) POINT ≧ PREDETERMINED VALUE ?
S13
YES
NO
CHANGE CURRENT CONDITIONS FOR EXPOSURE TO THOSE INDICATING ONE-LEVEL SMALLER(LARGER) EV THAT MAKES IMAGE DARKER(BRIGHTER)
S14
PRODUCE SHUTTER CONTROL INFORMATION FOR PRE-IMAGING ASSOCIATED WITH CHANGED CONDITIONS FOR EXPOSURE
S15
OUTPUT SHUTTER CONTROL INFORMATION FOR PRE-IMAGING, AND INSTRUCT CPU TO PERFORM PRE-IMAGING AGAIN
S16
PRODUCE SHUTTER CONTROL INFORMATION FOR ACTUAL IMAGING ASSOCIATED WITH CURRENT CONDITIONS FOR EXPOSURE
S17
OUTPUT SHUTTER CONTROL INFORMATION FOR ACTUAL IMAGING, AND INSTRUCT CPU TO STAND BY UNTIL ACTUAL IMAGING IS STARTED
S18
END

FIG.15A

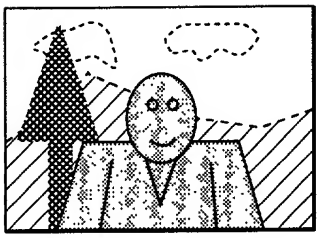


FIG.15B

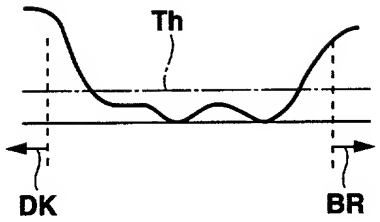


FIG.15C

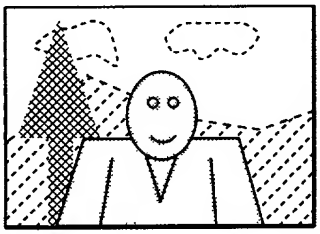


FIG.15E

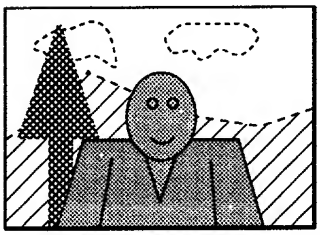


FIG.15D

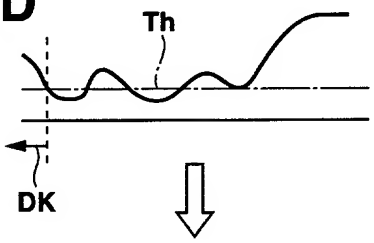


FIG.15F

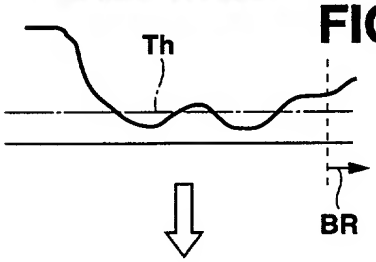


FIG.15G

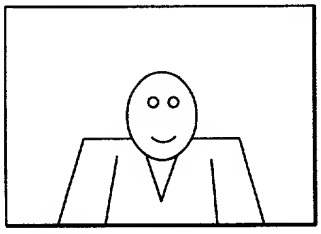


FIG.15I

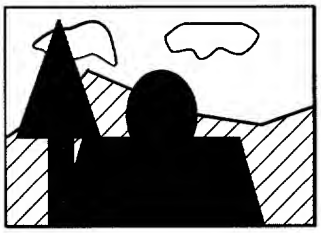


FIG.15H

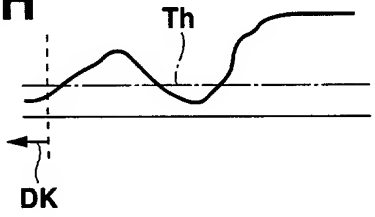


FIG.15J

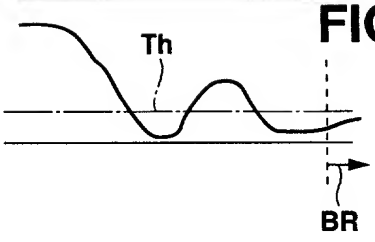


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FIG.16

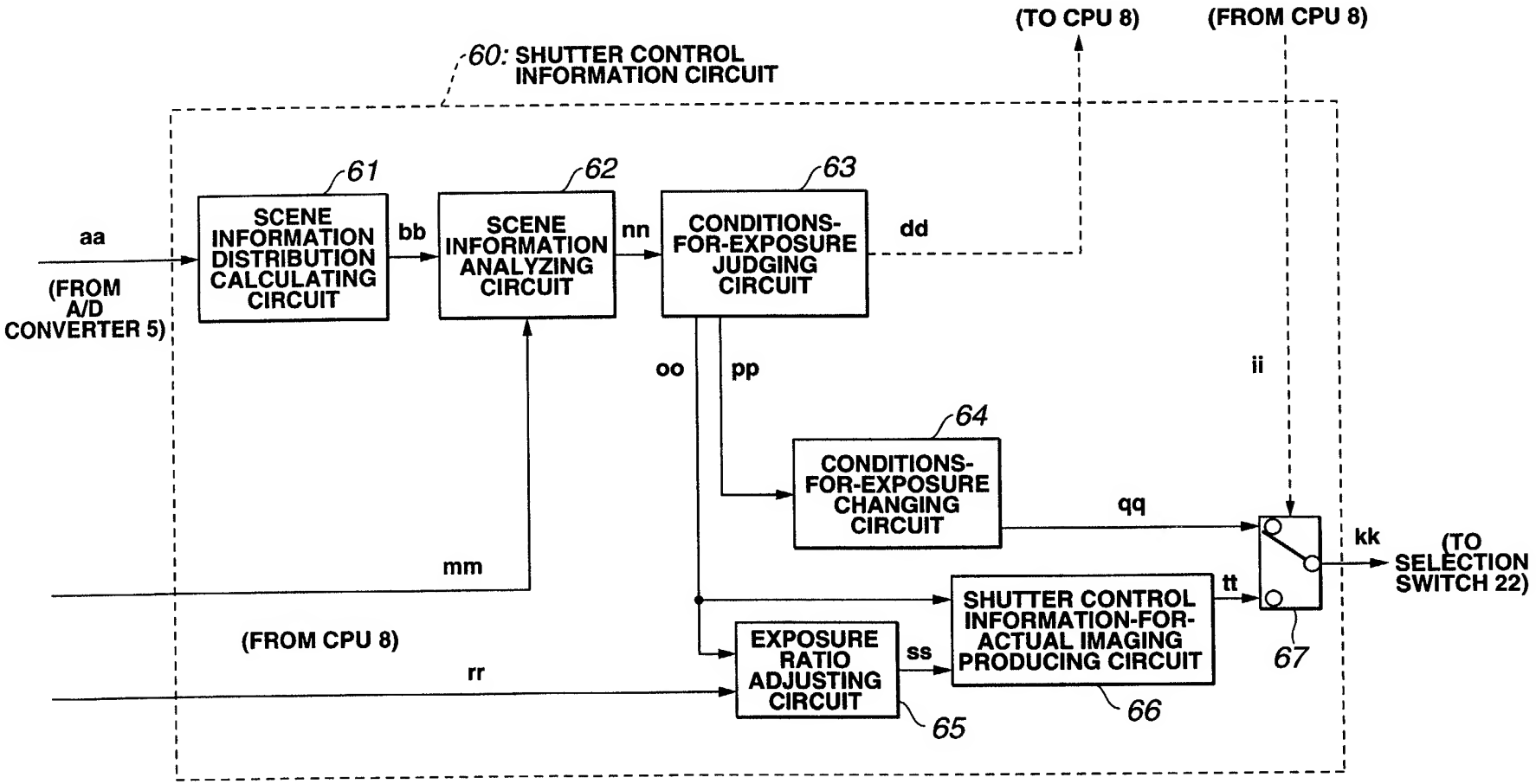
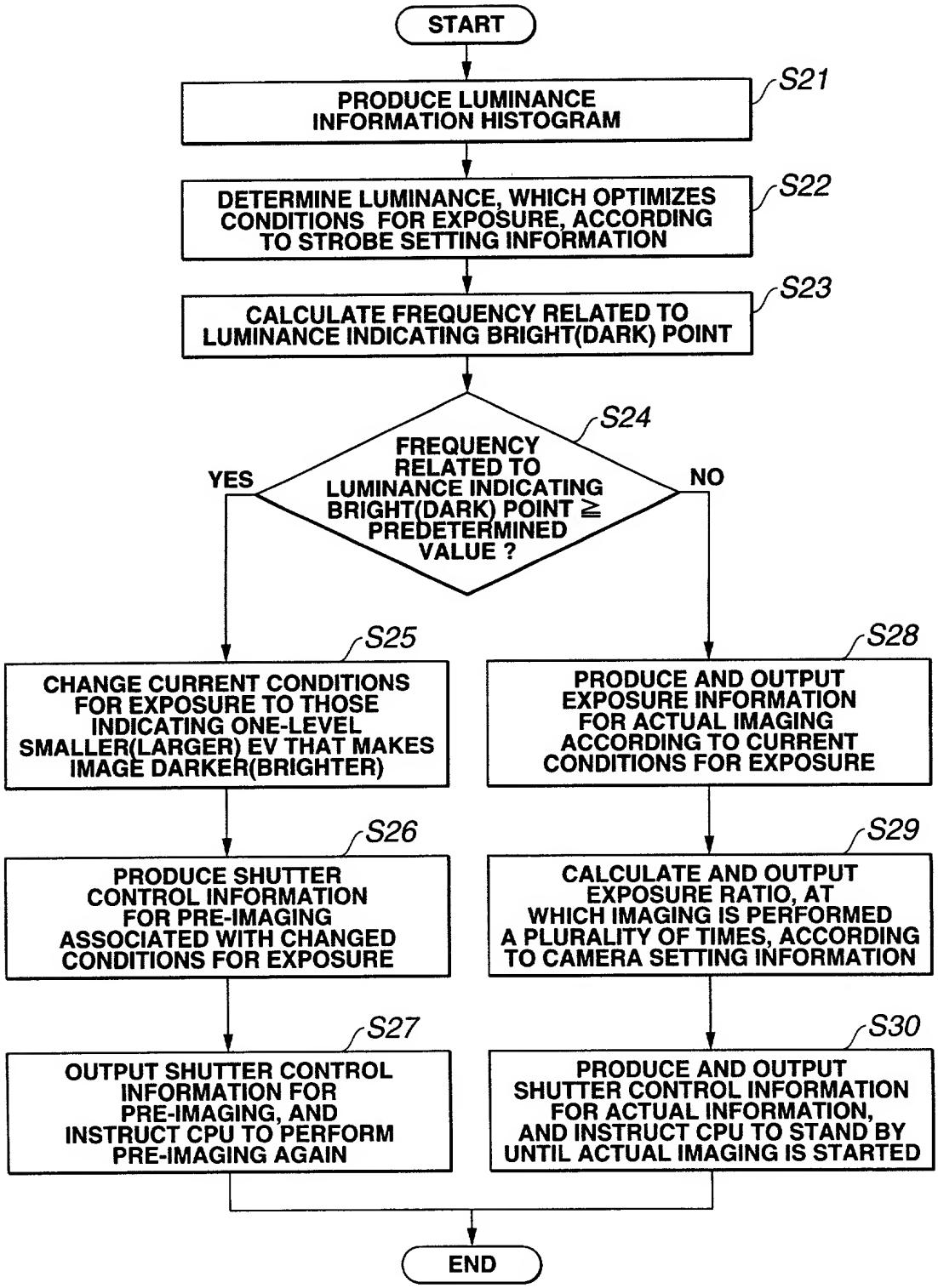

(TO CPU 8)
(FROM CPU 8)
60: SHUTTER CONTROL INFORMATION CIRCUIT
61
SCENE INFORMATION DISTRIBUTION CALCULATING CIRCUIT
62
SCENE INFORMATION ANALYZING CIRCUIT
63
CONDITIONS-FOR-EXPOSURE JUDGING CIRCUIT
aa
(FROM A/D CONVERTER 5)
bb
nn
dd
oo
pp
ii
64
CONDITIONS-FOR-EXPOSURE CHANGING CIRCUIT
qq
kk
(TO SELECTION SWITCH 22)
mm
tt
SHUTTER CONTROL INFORMATION-FOR-ACTUAL IMAGING PRODUCING CIRCUIT
67
(FROM CPU 8)
rr
EXPOSURE RATIO ADJUSTING CIRCUIT
ss
65
66

FIG.17



JP04558608 : JP2004

FIG.18

		MAJOR OBJECT	CONDITIONS FOR EXPOSURE FOR ACTUAL IMAGING (EXPOSURE TIME : UNIT SEC)											
			1/8000	1/4000	1/2000	1/1000	1/500	1/250	1/125	1/60	1/30	1/15	1/8	1/4
DIFFERENCE IN PHOTOMETRIC LEVEL (MAXIMUM VALUE-MINIMUM VALUE) (RATIO TO MAXIMUM VALUE IN PHOTOMETRIC RANGE)	50% OR MORE	BRIGHT POINT	16	16	16	16	16	16	16	16	8	4	2	1
		DARK POINT	1	1/2	1/4	1/8	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
	25~50%	BRIGHT POINT	8	8	8	8	8	8	8	8	8	4	2	1
		DARK POINT	1	1/2	1/4	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
	10~25%	BRIGHT POINT	4	4	4	4	4	4	4	4	4	4	2	1
		DARK POINT	1	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
	5~10%	BRIGHT POINT	2	2	2	2	2	2	2	2	2	2	2	1
		DARK POINT	1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	LESS THAN 5%		1	1	1	1	1	1	1	1	1	1	1	1
F-NUMBER	2.8	BRIGHT POINT	16	16	16	16	16	16	16	16	8	4	2	1
		DARK POINT	1	1/2	1/4	1/8	1/16	1/16	1/16	1/16	1/16	1/16	1/16	1/16
	4.0	BRIGHT POINT	8	8	8	8	8	8	8	8	8	4	2	1
		DARK POINT	1	1/2	1/4	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
	5.6	BRIGHT POINT	4	4	4	4	4	4	4	4	4	4	2	1
		DARK POINT	1	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
	8.0	BRIGHT POINT	2	2	2	2	2	2	2	2	2	2	2	1
		DARK POINT	1	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2	1/2
	11.0		1	1	1	1	1	1	1	1	1	1	1	1
STROBE SETTING (USED OR NOT)	USED	BRIGHT POINT	4	4	4	4	4	4	4	4	4	4	2	1
		DARK POINT	1	1/2	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4	1/4
	NOT USED	BRIGHT POINT	8	8	8	8	8	8	8	8	8	4	2	1
		DARK POINT	1	1/2	1/4	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8
CONDITIONS FOR ACTUAL IMAGING		BRIGHT POINT	4	4	4	4	4	4	4	4	4	4	2	1
		DARK POINT	1	1/2	1/4	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8	1/8

FIG.19A

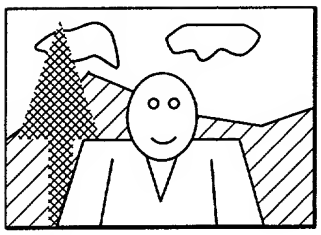


FIG.19B

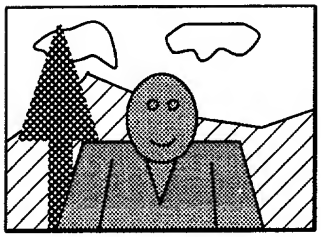
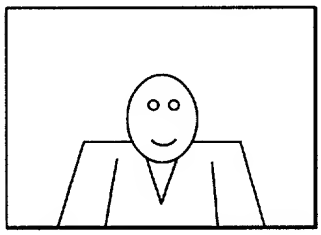



FIG.19C